



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,206	12/21/2001	David J. Evans	NTL-3.2.163/3604 (13398RO)	8467
26345	7590	06/22/2004	EXAMINER	
GIBBONS, DEL DEO, DOLAN, GRIFFINGER & VECCHIONE 1 RIVERFRONT PLAZA NEWARK, NJ 07102-5497			TORRES, JOSEPH D	
		ART UNIT	PAPER NUMBER	
		2133	3	
DATE MAILED: 06/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/026,206	EVANS ET AL.
	<b>Examiner</b> Joseph D. Torres	<b>Art Unit</b> 2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 02 April 2003.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5)  Claim(s) \_\_\_\_\_ is/are allowed.  
6)  Claim(s) 1-22 is/are rejected.  
7)  Claim(s) \_\_\_\_\_ is/are objected to.  
8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date .

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: '300' and '400' in Figure 2. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 11 and 12 are objected to because of the following informalities: "include" should be changed to --includes--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said checksum" in line 4 (Note: it is not clear whether "said checksum" refers to "another checksum" in line 3 or "a checksum" in line 2 since both are checksums). There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites the limitation "said shift register" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites, "recomputing said another checksum". It is unclear what is being recomputed since another checksum was already introduced in claim 1, i.e. is claim 3 referring to another another checksum?

Claim 3 recites, "removing an oldest unit of data from said another checksum recomputation and adding said more data to said recomputation", which is incomprehensible. A recomputation is step for recomputing not a device whereby data can be removed or stored. This limitation must be rewritten to clearly claim what the Applicant intends.

Claim 5 recites the limitation "said shift register" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 7, 9 and 10 recite, "said character pattern includes a plurality of character patterns", which renders the claim indefinite since it is unclear how to distinguish

between a character pattern and the plurality of character patterns that make up the character pattern.

Claims 7, 9 and 10 recite, "said checksum comprises a plurality of checksums", which renders the claim indefinite since it is unclear how to distinguish between said checksum and the plurality of checksums that make up the checksum.

Claim 8 recites, "said plurality of checksums", which is unclear since it is not clear where the "plurality of checksums" includes said checksum comprising the plurality of checksums.

Claim 10 recites, "said plurality of checksums" in lines 3-4. It is unclear whether "said plurality of checksums" includes said checksum comprising a plurality of checksums, the checksum in claim 1 or the another checksum in claim 1 since all of the cited checksums are previously introduced and comprise a plurality of checksums.

Claim 10 recites, "recomputing said another checksum based upon a longer portion of said data stream". It is unclear what is being recomputed since another checksum was already introduced in claim 1, i.e. is claim 10 referring to another another checksum?

The term "longer portion" in claim 10 is a relative term which renders the claim indefinite. The term "longer portion" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Note: it is not clear what is meant by longer portion, i.e. whether longer portion refers to a length longer than that of the previously mentioned portion in claim 1 or some other portion, i.e., what is being compared?

Claim 13 recites the limitation "said checksum" in lines 6-7 (Note: it is not clear whether "said checksum" refers to "another checksum" in line 5 or "a checksum" in line 4 since both are checksums). There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites, "said register comprises a plurality of registers", which renders the claim indefinite since it is unclear how to distinguish between said register and the plurality of registers that make up the register.

Claim 17 recites the limitation "said another checksum" in line 3 (Note: it is not clear whether "said another checksum" refers to "another checksum" in line 5 or "another checksum" in claim 13 since both are another checksums). There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites, "said checksum generator comprises a plurality of checksum generators", which renders the claim indefinite since it is unclear how to distinguish between said checksum generator and the plurality of checksum generators that make up the checksum generator.

Claim 20 recites, "recomputing said another checksum". It is unclear what is being recomputed since another checksum was already introduced in claim 13, i.e. is claim 20 referring to another another checksum?

Claim 20 recites, "removing an oldest unit of data from said another checksum recomputation and adding said more data to said recomputation", which is incomprehensible. A recomputation is step for recomputing not a device whereby data

can be removed or stored. This limitation must be rewritten to clearly claim what the Applicant intends.

Claim 21 recites the limitation "said another checksum" in line 8 (It is not clear which another checksum "said another checksum" refers to, the one in line 5 or line 6). There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites the limitation "said checksum" in lines 8 and 13 (Note: it is not clear whether "said checksum" refers to "another checksum" in lines 5 or 6 or "a checksum" in line 2 since both are checksums). There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites, "recomputing said another checksum". It is unclear what is being recomputed since another checksum was already introduced in lines 5 and 6, i.e. is line 11 referring to another another checksum?

Claim 21 recites, "removing an oldest byte of data from said another checksum recomputation and adding said another byte of data to said recomputation", which is incomprehensible. A recomputation is step for recomputing not a device whereby data can be removed or stored. This limitation must be rewritten to clearly claim what the Applicant intends.

Claim 21 recites the limitation "said recomputed checksum" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claim 22 recites the limitation "said checksum" in line 8 (Note: it is not clear whether "said checksum" refers to "another checksum" in line 6 or "a checksum" in line 5 since

both are checksums). There is insufficient antecedent basis for this limitation in the claim.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 7 recites, “said character pattern includes a plurality of character patterns and said checksum comprises a plurality of checksums”. Claim 5 recites, “multiple portions of said data stream”. The omitted structural cooperative relationships are: how the plurality of character patterns relates to the checksum comprising a plurality of checksums and multiple portions of a data stream (see claim 5).

Claims 1-20 and 22 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between a portion of a data stream and a character pattern.

The Examiner asserts that Claims 1-22 are replete with 35 U.S.C. 112 errors some of which the Examiner has indicated, above. The Applicant must revise the claims to remove all 35 U.S.C. 112 errors.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 11, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilkes; John (US 5832235 A).

35 U.S.C. 102(b) rejection of claim 1.

Wilkes teaches a method of searching for a character pattern within a data stream (col. 3, lines 57-65 in Wilkes teaches that a stream of candidate vectors is searched for a particular pattern; Note: a binary vector is a binary representation of a character and hence is a character for all practical purposes) comprising: computing a checksum for said character pattern (Figure 3 of Wilkes teaches that checksum for a particular vector pattern is pre-computed and stored); computing another checksum for a predetermined portion of said data stream (Step 401 in Figure 4 of Wilkes teaches that another checksum for a candidate vector is calculated); and comparing said another checksum to said checksum to determine if there is a match (Steps 403 and 405 in Figure 4 of Wilkes teaches that said another checksum is compared to said pre-computed checksum to determine if there is a match).

35 U.S.C. 102(b) rejection of claims 11 and 12.

Col. 4, lines 23-26 in Wilkes teaches byte-by-byte scanning.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2-6, 13-16, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkes; John (US 5832235 A) in view of Heegard; Chris et al. (US 5703887 A, hereafter referred to as Heegard).

35 U.S.C. 103(a) rejection of claims 2, 3 and 5.

Wilkes substantially teaches the claimed invention described in claim 1 (as rejected above).

However Wilkes does not explicitly teach the specific use of shifting said portion of said data stream into a shift register.

Heegard, in an analogous art, teaches shifting a portion of a data stream into a shift register to search and find a synchronization pattern (see Abstract) using a CRC checksum. Note: Wilkes teaches the use of checksums for searching a data stream of pattern vectors for a particular pattern, but does not teach a particular checksum nor a means to produce the checksums in the Wilkes patent whereas Heegard teaches a means for producing a required element, the checksums, of the Wilkes patent. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use CRC checksums since CRC checksums are some of the most common place checksums due to the fact that CRC checksums can be implemented using high-speed linear feedback shift registers (Note: shift registers are among the simplest of digital circuits and operable at speeds quite close to the maximum speed possible for a single gate using a given device technology).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilkes with the teachings of Heegard by including an additional step of shifting a portion of a data stream into a shift register to search and find a synchronization pattern. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that shifting a portion of a data stream into a shift register to search and find a synchronization pattern would have provided the opportunity to implement the search method in Wilkes using CRC checksums (Note: CRC checksums can be implemented using high-speed linear feedback shift registers and shift registers are among the simplest of digital circuits and operable at speeds

quite close to the maximum speed possible for a single gate using a given device technology).

35 U.S.C. 103(a) rejection of claim 4.

Col. 3, lines 57-65 in Wilkes teaches that a stream of candidate vectors is searched for a particular pattern until a match occurs.

35 U.S.C. 103(a) rejection of claim 6.

Col. 3, lines 57-65 in Wilkes teaches that a stream of candidate vectors is searched for a particular pattern until a match occurs. Candidate vectors are multiple portions.

35 U.S.C. 103(a) rejection of claims 13, 14 and 20-22.

Wilkes teaches a method of searching for a character pattern within a data stream (col. 3, lines 57-65 in Wilkes teaches that a stream of candidate vectors is searched for a particular pattern; Note: a binary vector is a binary representation of a character and hence is a character for all practical purposes) comprising: computing a checksum for said character pattern (Figure 3 of Wilkes teaches that checksum for a particular vector pattern is pre-computed and stored); computing another checksum for a predetermined portion of said data stream (Step 401 in Figure 4 of Wilkes teaches that another checksum for a candidate vector is calculated); and comparing said another checksum to said checksum to determine if there is a match (Steps 403 and 405 in Figure 4 of

Wilkes teaches that said another checksum is compared to said pre-computed checksum to determine if there is a match).

However Wilkes does not explicitly teach the specific use of shifting said portion of said data stream into a shift register.

Heegard, in an analogous art, teaches shifting a portion of a data stream into a shift register to search and find a synchronization pattern (see Abstract) using a CRC checksum. Note: Wilkes teaches the use of checksums for searching a data stream of pattern vectors for a particular pattern, but does not teach a particular checksum nor a means to produce the checksums in the Wilkes patent whereas Heegard teaches a means for producing a required element, the checksums, of the Wilkes patent. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use CRC checksums since CRC checksums are some of the most common place checksums due to the fact that CRC checksums can be implemented using high-speed linear feedback shift registers (Note: shift registers are among the simplest of digital circuits and operable at speeds quite close to the maximum speed possible for a single gate using a given device technology).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilkes with the teachings of Heegard by including an additional step of shifting a portion of a data stream into a shift register to search and find a synchronization pattern. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that shifting a portion of a data stream into a shift

register to search and find a synchronization pattern would have provided the opportunity to implement the search method in Wilkes using CRC checksums (Note: CRC checksums can be implemented using high-speed linear feedback shift registers and shift registers are among the simplest of digital circuits and operable at speeds quite close to the maximum speed possible for a single gate using a given device technology).

35 U.S.C. 103(a) rejection of claims 15 and 16.

Col. 4, lines 23-26 in Wilkes teaches byte-by-byte scanning.

6. Claims 7, 8, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkes; John (US 5832235 A) and Heegard; Chris et al. (US 5703887 A, hereafter referred to as Heegard).

35 U.S.C. 103(a) rejection of claims 7, 8, 17 and 19.

Wilkes and Heegard teach that the message data stream includes a plurality of vector patterns each with its own checksum (col. 3, lines 57-65 in Wilkes) However Wilkes and Heegard do not explicitly teach the specific use of parallel comparisons.

The Examiner asserts that one of ordinary skill in the art at the time the invention was made would have known that operating any system in parallel is a means for speeding up the operation of a system, hence one of ordinary skill in the art at the time the

invention was made would have been highly motivated to use parallel comparisons to speed up operations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Wilkes and Heegard by including use of parallel comparisons. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of parallel comparisons would have provided the opportunity use of parallel comparisons.

35 U.S.C. 103(a) rejection of claim 18.

Col. 3, lines 54-56 in Wilkes teaches that the checksum is a function of both contents and length of data field, hence is variable according to the length of the data field.

7. Claims 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkes; John (US 5832235 A).

35 U.S.C. 103(a) rejection of claims 9 and 10.

Wilkes teaches that the message data stream includes a plurality of vector patterns each with its own checksum (col. 3, lines 57-65 in Wilkes)

However Wilkes does not explicitly teach the specific use of parallel comparisons.

The Examiner asserts that one of ordinary skill in the art at the time the invention was made would have known that operating any system in parallel is a means for speeding

up the operation of a system, hence one of ordinary skill in the art at the time the invention was made would have been highly motivated to use parallel comparisons to speed up operations.

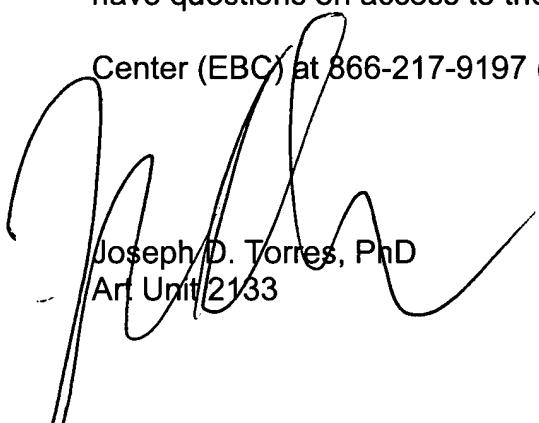
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Wilkes by including use of parallel comparisons. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of parallel comparisons would have provided the opportunity use of parallel comparisons.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishimura; Takashi (US 5570362 A) teaches a switch apparatus handling variable length cells, and an exchange handling variable length cells.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decay can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph D. Torres, PhD  
Art Unit 2133